basic open-hearth furnace have above all led to the conviction that it is more profitable in general to waive desulphurisation in this apparatus, and only to employ as much as possible sulphur-free materials for the charges.

6. OXYGEN IN IRON.

Oxygen is contained in all classes of iron, but only in very minute amounts. In larger amounts, it is only contained in iron by the treatment of the same in the open-hearth furnace itself, inasmuch as the free ferrous-oxide contained in the slag is soluble in the molten metal. The estimation of oxygen in iron by analysis is accompanied by very great difficulties, whence one does not know exactly how much the amounts are which can be taken up by iron under changing conditions.

According to Ledebur, iron contains carbon and oxygen as under:—

(Horde	0-024 0	0'07 O
Not given .	0-037 0	0-244 0
Komgshutte	O'OI C	0*07 O
Not given	0-05 0	0-171 O
Not given	0-123 0	0-187 0
Sie^s-Martin , f gfe^	£}J g	Jg O
Steel (Bodram	0-19 0	0-07 0

One assumes that the oxygen is combined with iron as FeO.

' i f*

There is in FeO per unit Fe^=0'29 unit 0 ... (36)

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In spite of the amounts of oxygen which go over into t\ie Iron being in small ratio to the weight of iron, one can daily observe that iron takes up oxygen; that by themselves large amounts of reducing agents are not capable of completely hindering its entry, as well as that the resistance which they oppose to this entry, is of different amount. Carbon, phosphorus and silicon, for example, act very imperfectly, which possibly indicates that the velocity with which they are capable of keeping in motion and endeavouring to attain uniform distribution in the iron is relatively small, and that, therefore, oxygen is capable of removing these reducing agents in the portions where it has penetrated more rapidly

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